

NOTES ON NEOTROPICAL MALPIGHIACEAE—IX

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ABSTRACT. Six new species of neotropical Malpighiaceae are named and described (*Banisteriopsis macedae* W. R. Anderson, *Byrsonima homeieri* W. R. Anderson, *Heteropterys colombiana* W. R. Anderson, *Mascagnia almedae* W. R. Anderson, *Mascagnia conformis* W. R. Anderson, and *Tetrapterys natans* W. R. Anderson), and two new combinations are proposed (*Mascagnia allopterys* (Moris) W. R. Anderson and *Mascagnia bierosa* (Adr. Juss.) W. R. Anderson).

Although my colleagues and I have described many new species of Malpighiaceae over the last 32 years, we continue to encounter additional novelties as we study problematic groups and newly received gifts and loans. This paper deals with a few of those additions to the flora of the neotropics.

Banisteriopsis macedae W. R. Anderson, sp. nov.—**TYPE:** PERU, Madre de Dios: Manu Province, Puerto Maldonado, Los Amigos Biological Station, Madre de Dios River, ca. 7 km upriver from mouth of Río Los Amigos, orillas del Río Los Amigos, 19 May 2004 fl., A. P. Maceda 1391 (holotype: MICH!).

Liana lignosa, caulibus sericeis; lamina foliorum majorum 9.5–11.5 cm longa, 3.7–4.5 cm lata, apice acuminata, abaxialiter sparsim sericea utrinque 1–3 (4) glandulis peltatis instructa; petiolus 8–10 mm longus, sericeus, eglandulosus; bracteae bracteolaeque caducae; petala crenea, fimbriata; petalum posticum ungue apice constricto; antherae loculis piliferis, 5 anticae connectivo glanduloso-tumido (praecipue 3 sepalis anticis oppositae), 5 posticae connectivo loculos non vel vix superanti, anthera petalo postico opposita rudimentaria vel nulla; nux samarae aliquot alulis lateralibus instructa.

Woody vine; stems densely and persistently sericeous with long, whitish, strongly appressed hairs, glabrescent in age. Lamina of larger leaves 9.5–11.5 cm long, 3.7–4.5 cm wide, elliptical or widest slightly above the middle, cuneate at base, long-acuminate at apex with the acumen 1–1.5 cm long, initially loosely sericeous above but soon glabrate except often persistently sericeous on midrib and sometimes on major lateral veins, thinly but persistently sericeous below with the hairs dense on midrib and lateral veins, bearing 1–3 (4) peltate glands below on each side between midrib and margin on lateral veins in proximal 2/3, the principal lateral veins 5–7 on each side of midrib, the cross-veins strongly scalariform; petiole 8–10 mm long, densely and persistently sericeous, eglandular; stipules interpetiolar, distinct, 0.3–0.5 mm long, triangular or rounded, often hidden by hairs on stem. Inflorescences terminal and lateral, paniculate with the flowers in umbels of 4 (–6), the axes densely and persistently loosely sericeous or tomentose; bracts and bracteoles 1–1.5 mm long, 0.7–0.9 mm wide, triangular or ovate, abaxially densely tomentose, adaxially glabrous, caducous (mostly falling before anthesis); peduncle 0–1 mm long; pedicel 6–9 mm long, densely sericeous or appressed-tomentose. Sepals 3–4 mm long, 2.5–3.5 mm wide, elongate-triangular with the apex obtuse, distally reflexed in bud and open flower,

densely pilose or tomentose on both sides, all 5 biglandular with the glands borne on free part of sepal, the glands on 4 lateral sepals 2 mm long, those on anterior sepal 1–1.3 mm long. Petals cream-colored, glabrous; lateral petals reflexed, the claw 2 mm long, the limb 4.5–6 mm long and wide, deeply cup-shaped, fimbriate (especially the posterior-lateral pair) with the fimbriae eglandular; posterior petal erect, the claw 2.5 mm long, very broad and thick, constricted at apex, the limb 5–6 mm long, 5 mm wide, ovate, flat or shallowly concave, long-fimbriate with the fimbriae gland-tipped, especially those on proximal half of limb. Stamens strongly heteromorphic, the filaments glabrous and connate in proximal 1/4–1/2, the anther locules bearing a few hairs at apex and often at base as well; stamens opposite 3 anterior sepals with filament 1.5–2.5 mm long, the anther with locules 1 mm long and connective distally enormously glandular-swollen, overtopping locules by 1–1.5 mm; stamens opposite anterior-lateral petals with filament 1.5 mm long, the anther with locules 1 mm long and connective distally somewhat glandular-swollen, overtopping locules by 0.7 mm; stamens opposite posterior-lateral petals with filament 2–2.5 mm long, the anther with locules 0.8 mm long and connective not swollen and not or hardly exceeding locules; stamens opposite posterior-lateral sepals with filament 2.5 mm long, the anther with locules 0.3–0.5 mm long and connective not swollen and not or hardly exceeding locules; stamen opposite posterior petal with filament 2–2.3 mm long, the anther lacking or represented by a rudimentary connective ca. 0.3 mm long, without locules or bearing minute (sterile?) locules. Ovary 1–1.5 mm high, densely hirsute; styles hirsute on proximal 1/2–2/3, distally tapered to very small truncate or slightly capitate apical stigmas; anterior style 2.2–2.5 mm long, bowed back toward anterior sepal; posterior styles 3–3.3 mm long, thickened in proximal half, bowed toward posterior petal. Samara persistently sericeous, 35–45 mm long; dorsal wing 28–40 mm long, 13–18 mm wide; nut ca. 5–7 mm in diameter, glabrous inside locule, bearing on both sides several winglets 2–7 mm high, these mostly parallel to ventral areole and imbricated but some (the smallest, outermost winglets) sometimes radiating from areole; carpophore short and broad (ca. 0.5–1 mm long, 0.3–0.5 mm wide), probably non-functional; ventral areole 3–3.5 mm long, 2–2.5 mm wide, ovate.

ADDITIONAL COLLECTIONS EXAMINED, **Peru**. MADRE DE DIOS: Manu Province, Río Amiguellós, Aug fr, Maceda *et al.* 1533 (BRIT); Cocha Cashu, 400 m, Oct fr, Niñez 1926 (F).

This species is named for Abel Piher Maceda Chuan (b. 1973), who collected the holotype and one of the paratypes.

Banisteriopsis macedae can be compared to other species of the genus on the following bases: petioles eglandular, leaf glands peltate, bracts and bracteoles caducous, sepals elongated and triangular, petals cream-colored, posterior petal constricted at the apex of the claw, anthers pilose, and samara with several imbricated winglets on the sides of the nut and glabrous inside the locule. According to the treatment by Gates (1982), those characteristics suggest a relationship to *B. adenopoda* (Adr. Juss.) B. Gates, *B. membranifolia* (Adr. Juss.) B. Gates, or *B. pulchra* B. Gates. *Banisteriopsis adenopoda*, a species of southeastern Brazil, is eliminated by the fact that its lamina is velutinous on both surfaces, *Banisteriopsis membranifolia*, another species of southeastern Brazil, has glands on the petiole, rounded sepals, and the posterior petal without a constriction at the apex of the claw. *Banisteriopsis pulchra* agrees with *B. macedae* in having peltate leaf glands, deciduous bracts and bracteoles, the posterior petal constricted at the apex of the claw, pilose anthers, and the samara with well-developed lateral winglets on the nut. Moreover, it occurs as far west as Bolivia,

coming closer to southern Peru than any other close relative of *B. macedae*. *B. pulchra* var. *pulchra* has the petiole biglandular at the apex, the bracts and bracteoles persist longer than in *B. macedae*, the petals are pink, and the leaves are very densely sericeous below. In *B. pulchra* var. *glabrata* B. Gates (known only from a single collection from La Paz Province, Bolivia) the lamina is glabrate below, more like the thinly sericeous lamina of *B. macedae*, but Gates described it as having pink petals, not the cream-colored petals of *B. macedae*, which also differs in having all three of the posterior anthers much reduced. Indeed, in the type of *B. macedae* (the only collection seen with flowers), the anther opposite the posterior petal is rudimentary or lacking. *Banisteriopsis macedae* is also notable for having small glands on the anterior sepal. When more collections are known from western Bolivia and southern Peru it may become necessary to combine *B. macedae* and *B. pulchra* var. *glabrata*, but if so the former name should be adopted; I am satisfied that the plant described here deserves species status.

Byrsonima homeieri W. R. Anderson, sp. nov.—TYPE. ECUADOR. Zamora-Chinchipe: area of the Estación Científica San Francisco, road Loja–Zamora, ca. 35 km from Loja, 03°58' S, 79°04' W, montane tropical forest, 1880 m, 26 Aug 2005 fl, *Homeier 1566* (holotype: MICH!; isotypes: AAU! GOET, K! LOJA, MO, NY! QCNE). Fig. 1.

Arbor 7–12 m alta; lamina foliorum majorum 12.5–19 cm longa, 5.5–9.2 cm lata, coriacea, mox glabrata; petiolus 13–25 mm longus; stipulae omnino connatae, 3–5 mm longae; bractaeae bracteolaeque 0.5–1.3 mm longae lataeque, \pm persistentes; pedicellus 8–10 mm longus (fructu usque ad 17 mm), crassus, rectus in alabastro fructuque; sepala lutea aetate rubra, in fructu accrescentia; petala lutea; antherae glabrae, 1.7–1.9 mm longae, loculis connectivo non vel vix (usque ad 0.1 mm) superatis; ovarium sparsim sericeum; styli 2.2 mm longi, recti.

Tree 7–12 m tall; stems initially sericeous but soon glabrescent to glabrate. Lamina of larger leaves 12.5–19 cm long, 5.5–9.2 cm wide, elliptical or obovate, cuneate or gradually narrowed at base, obtuse or rounded at apex, coriaceous, initially thinly sericeous but at maturity glabrate or with a few appressed hairs on abaxial midrib, the 7–10 pairs of lateral veins \pm prominent, the reticulum visible on both sides in dried leaves; petiole 13–25 mm long, sparsely sericeous to glabrate; stipules of each intrapetiolar pair completely and smoothly connate, the pair triangular, 3–5 mm long, abaxially sparsely sericeous (?) to glabrate, adaxially glabrous except at very base. Inflorescence 11–21 cm long, tightly brown-sericeous to glabrescent in age; flowers borne 1 per bract (a minute second bud often present but not developed); bracts and bracteoles 0.5–1.3 mm long and wide, ovate or triangular, sparsely sericeous or glabrate, mostly persistent through maturation of fruit, thereafter persistent or deciduous; peduncle absent or up to 0.7 mm long; pedicel 8–10 mm long in flower, up to 17 mm long in fruit, \pm persistently sericeous, often relatively thick, straight in bud and fruit, turning red in age. Sepals yellow turning red in age, 1.5–2 mm long beyond glands, 2.5–3 mm wide, broadly triangular with obtuse or rounded apex, appressed, abaxially thinly sericeous, adaxially glabrous, accrescent to ca. 4–5 mm long and 5–6 mm wide in fruit, all biglandular, the glands yellow, 2.8–3.2 mm long, obovate. Petals yellow, glabrous; lateral petals spreading or reflexed, the claw 2–2.5 mm long, the limb 4.5–5.5 mm long, 4–6 mm wide, cordate, deeply cupshaped, erose or denticulate; posterior petal erect, the claw 2.5 mm long, thick, the limb 3.5 mm long and wide, broadly sagittate, corrugated, erose. Filaments 1.8–2 mm long, abaxially

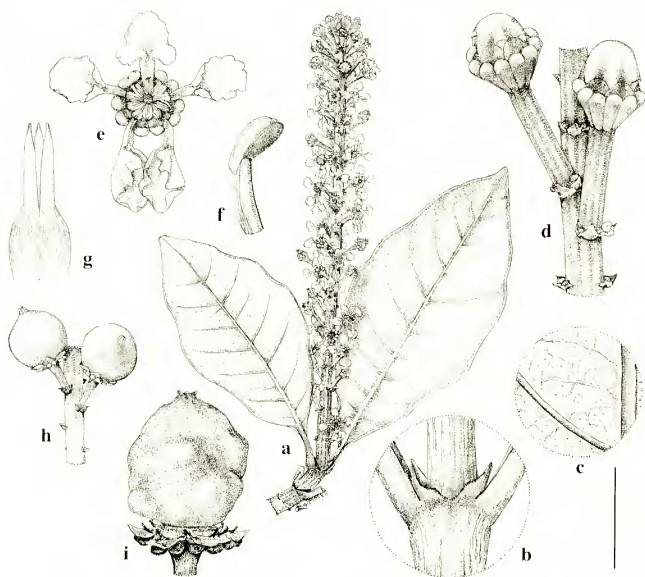


FIG. 1. *Byrsonima homeieri*. a. Flowering branch. b. Node with connate intrapetiolar stipules. c. Lamina, adaxial surface. d. Portion of inflorescence with two flower buds. e. Flower, posterior petal uppermost. f. Stamen, lateral view. g. Gynoecium. h. Fruits, drawn from a photo taken before specimen was dried. i. Dried fruit. Scale bar equivalents: a, 4 cm; b, 8 mm; c, 4 mm; d, e, 8 mm; f, g, 2.7 mm; h, 4 cm; i, 8 mm. (Based on: a–g, *Homeier 1566*, MICH; h, *Homeier 1053*, MICH; i, *Neill 12631*, MICH.)

glabrous, adaxially hirsute at base; anthers glabrous, 1.7–1.9 mm long, subequal, the locules linear, not alate, rounded and attached at apex, not or hardly (up to 0.1 mm) exceeded by connective at apex. Ovary 1.5 mm high, very thinly sericeous, all 3 locules fertile; styles 2.2 mm long, straight. Fruit yellow, glabrous, with bases of styles forming apical beaks, roughly globose (somewhat depressed to somewhat elongated), 18–23 mm in diameter before drying, 12–20 mm in diameter after drying, the stone with prominent swellings.

Distribution. Known only from montane tropical forest at 1880–2600 m in Zamora-Chinchipe, Ecuador [*Rubio et al.* 2256 was reported as coming from Loja Province, but with exactly the same geographical coordinates as all the other collections, which their collectors labeled as coming from Zamora-Chinchipe Province].

ADDITIONAL COLLECTIONS EXAMINED. **Ecuador.** ZAMORA-CHINCHIPE, same approximate locality as type: Oct fl, *Homeier 551* (MICH), Mar fr, *Homeier 1053* (MICH), Apr fr, *Neill 12631*, 12632, 12633 (all MICH), Dec fr, *Rubio et al.* 2256 (MICH). *Homeier 551* and 1053 were collected from the same tree as the type, *Homeier 1566*.

Byrsonima homeieri is named in honor of Dr. Jürgen Homeier (b. 1968), a plant ecologist at the University of Göttingen who has collected it several times during his studies in the San Francisco reserve in Ecuador.

The relationships of *Byrsonima homeieri* are to be sought among other species with yellow petals, smoothly connate stipules, and anthers with the connective not or hardly exceeding the locules, of which there are many. None of them, however, has the combination of characteristics that sets this species apart: thick, stiff, nearly glabrous leaves; very short, similar, persistent bracts and bracteoles; stout, straight pedicels that turn red in age and remain straight in fruit; sepals turning red in age and accrescent in fruit; and completely glabrous anthers. The pedicels are especially notable, because most yellow-flowered species of *Byrsonima* have slender pedicels that are often circinate in bud and decurved in fruit. The species most closely related to *B. homeieri* may be *B. hypoleuca* Turcz., a tree of montane Venezuela and Colombia. It has similar stipules, straight pedicels, yellow petals, and anthers with short connectives, but differs in having the leaves densely and persistently sericeous below, the bracts long, narrow, and deciduous, and the anthers sparsely sericeous.

Heteropterys colombiana W. R. Anderson, sp. nov.—TYPE. COLOMBIA. Cesar: 12 km N of Codazzi, edge of dry forest, 5 Sep 1938 fl, *Haught 2321* (holotype: MO!; isotypes: CAS! NY! US).

Frutex 2 m altus, caulibus dense velutinis; lamina supra verrucosa et velutina demum glabrescens, subtus dense et pertinaciter tomentosa, basi biglandulosa et interdum 2 glandulis minoribus super basim instructa; inflorescentia dense velutina, floribus in umbellis vel corymbis (2–) 4–6 (–8)-floris portatis; bracteolae prope medium pedunculi portatae; petala lutea, glabra; styli 1.4–2.3 mm longi, apice dorsaliter truncati.

Shrub ca. 2 m tall, described by Cuatrecasas as “± tortuoso, bejucoso” [± twisted, vinelike]; stems initially densely velutinous with the ferrugineous hairs fading in age, long-persistent but abraded from older stems (after the first year?); punctiform lenticels soon developed and prominent. Largest leaves, remote from inflorescence (only 1 seen), with lamina 14.7 cm long, 8.5 cm wide, broadly elliptical, rounded at base, obtuse at apex, the petiole 4 mm long; larger leaves on flowering stems with lamina 5–10 cm long, 3–5.5 cm wide, elliptical, cuneate or rounded at base, acute, abruptly acuminate, or obtuse at apex, velutinous above with broadly V-shaped hairs to belatedly glabrescent, verrucose, densely and persistently tomentose below, the hairs with a very short stalk and a long (0.8–1.6 mm) straight or sinuous crosspiece, usually bearing 1 large gland on each side of midrib at base and sometimes another smaller gland somewhat above base between midrib and margin; petiole 3–4 mm long, eglandular (rarely biglandular when glands from lamina are displaced downward); stipules lacking or 0.4–0.7 mm long, triangular, borne on base of petiole. Inflorescence elongated, paniculate, ferrugineous-velutinous throughout, with the short, dense branches borne in axils of progressively smaller leaves, the flowers borne ultimately in umbels or tight corymbs of (2–) 4–6 (–8), on a stalk 3–10 mm long; bracts 1–2 mm long, 0.6–1 mm wide, narrowly elliptical, eglandular, abaxially tomentose, adaxially glabrous; peduncle 1.5–4 mm long; bracteoles like bracts but shorter (0.6–1 mm long), borne at or somewhat above middle of peduncle; pedicel 2.5–4 mm long, as long as peduncle or longer. Sepals 1.5–2 mm long beyond glands, 1.3–1.7 mm wide, elliptical or ovate with the apex obtuse or broadly rounded, appressed in anthesis, abaxially

densely appressed-tomentose with ferrugineous hairs, adaxially glabrous, the anterior eglandular, the lateral 4 biglandular with the glands 1.5–2 mm long. Petals yellow, glabrous, abaxially smooth (i.e., not carinate or winged); lateral petals spreading or reflexed, the claw 1.2–1.8 mm long, the limb 3–3.8 mm long, 2.5–3.2 mm wide, obovate or rectangular, concave or flat with the margin often revolute, erose; posterior petal similar to lateral petals but erect, with a longer (1.5–2.5 mm) thicker claw. Stamens glabrous; filaments 2–3 mm long, longest opposite sepals and posterior-lateral petals, connate in proximal half, straight except the 2 opposite posterior-lateral sepals bent sideways away from posterior petal; anthers 0.9–1.2 mm long, subsimilar, the connective uniformly dark red or distally yellow. Ovary 1.5 mm high, densely hirsute; styles 1.4–2.3 mm long, similar but the anterior slightly shorter and slenderer than the posterior 2, hirsute on proximal half, nearly straight but the anterior leaning toward posterior petal and the posterior 2 diverging, terete or laterally flattened, dorsally truncate at apex, the stigma internal. Fruit unknown.

Distribution. Known only from Cesar, Colombia, on the lower western slopes of the Cordillera Oriental. [The NY sheet of *Haught* 2321 bears a printed label stating that it came from Los Llanos, Meta, but that is clearly the result of a clerical error, because the typed information on the specimen states that it came from north of Codazzi, which was formerly in Magdalena and is now in Cesar; the CAS and MO sheets have the same typed information, plus a printed label for Magdalena.]

ADDITIONAL COLLECTIONS EXAMINED. **Colombia.** CESAR: La Jagua, Magdalena Valley, forest, Sep fl, Allen 685 (MO); Cordillera Oriental, vertiente occidental, Quebrada del Gobernador (afluente del Río Peralonso), carretera de San Martín a Ocaña, Km 21–22, 700 m, Sep fl, Cuatrecasas & Rodríguez 27966 (K); Aguachica, 800 ft [240 m], Seidlin 265 (G).

This species, which is named for the country where it is endemic, was treated by Cuatrecasas (1958) as *Heteropterys tomentosa* Adr. Juss., a species of south-central Brazil, Paraguay, and adjacent Bolivia. The Colombian plants are certainly referable to the complex of species containing *H. tomentosa*, but they most resemble *H. falcifera* Adr. Juss., a very similar species known only from Bolivia. The latter differs from *H. colombiana* in having a more twining habit, leaves smooth (not verrucose) above, a more open inflorescence, and the stems and inflorescence less exuberantly hairy. It remains to be seen whether *H. colombiana* will maintain its distinctness when the complex is better known, especially from Peruvian populations.

Mascagnia allopterys (Moris) W. R. Anderson, comb. nov. *Tetrapterys allopterys* Moris, *Pianta malpigh.* 4. 1848.—TYPE: COLOMBIA. Bolívar: Mompos, Bertero in 1820 (lectotype, designated here, the specimen in fruit: TO).

Mascagnia tenuis Cuatrec., Webbia 13: 371. 1958.—TYPE: COLOMBIA. Cesar ["Magdalena"]: Gamarra, Río Magdalena, Fosberg 21399 (holotype: US!; isotype: NY!).

This species of *Mascagnia* is endemic to Bolívar and adjacent Cesar in northern Colombia. It is immediately recognizable in fruit because the lateral wings of the samara are mostly dissected irregularly into 3–5 narrowly rectangular segments, while the large dorsal crest is entire and extended beyond the nut (especially at the apex) like a prow. In his protologue, Moris (1848) provided a thorough description and excellent illustration, which leave me in no doubt as to the identity of his plant, even though I have not seen either of his syntypes (the second syntype was a flowering specimen, also collected by Bertero in 1820 at Mompos). Niedenzu (1928, p. 217) never

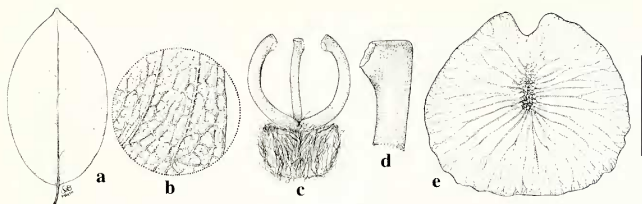


FIG. 2. *Mascagnia almedae*. a. Leaf, adaxial view. b. Enlargement of adaxial leaf surface. c. Gynoeceum, anterior style in center. d. Apex of posterior style. e. Samara, abaxial view. Scale bar equivalents: a, 4 cm; b, 5 mm; c, 4 mm; d, 1.3 mm; e, 1.3 cm. (Based on: a, b, e, *Breedlove & Almeda 56949*, MICH; c, d, *Breedlove 48675*, MICH.)

saw specimens of this species and cited Moris's name among his "Species incertae mihi invisae" of *Tetrapteryx*. Cuatrecasas (1958) did not mention the Moris name or publication. If he had ever seen Moris's illustration he surely would have taken up his name and made the combination in *Mascagnia* instead of describing the plant again as *M. tenuis*.

Mascagnia almedae W. R. Anderson, sp. nov.—TYPE: MEXICO. Chiapas: Mun. Angel Albino Corzo, above Finca Cuxtepec, montane rain forest, 1380 m, 10 Jan 1982 fr. *D. E. Breedlove & F. Almeda 56949* (holotype: MICH!; isotype: CAS!). Fig. 2.

Mascagnia vacciniifoliae affinis, sed caulibus sericeis vel glabratis, lamina foliorum majorum 6–7.3 cm longa et 4–4.5 cm lata, stipulis 0.7–1.1 mm longis, ovario dense piloso, stylis apice dorsaliter truncatis vel brevissime apiculatis, et samara 2.5–3 cm lato altoque differt.

Woody vine; stems tightly sericeous to glabrate and sometimes bearing adventitious roots in vertical rows. Lamina of larger leaves 6–7.3 cm long, 4–4.5 cm wide, elliptical or somewhat ovate, rounded at base, rounded, obtuse, or abruptly short-acuminate at apex, initially thinly sericeous but soon glabrate, usually bearing 1 (2) small abaxial glands on each side of midrib between midrib and margin in proximal 1/4 or 1/3, the principal lateral veins 3–5 on each side of midrib, the reticulum prominent above in older leaves; petiole 6–8 mm long, sericeous to glabrate, eglandular or biglandular at or slightly below apex; stipules 0.7–1.1 mm long, triangular, sericeous or glabrate, soon deciduous and leaving prominent scars. Inflorescence a compact panicle 2–4 cm long borne on leafless stems of previous growing season, comprising 3 or 5 umbels or corymbs ca. 1 cm long, the middle pair of umbels often reduced to 1 flower each, the others containing 4–10 flowers each, the axis (including peduncles) loosely sericeous, glabrescent in age; bracts 0.5–1 mm long, triangular, eglandular, pilose, persistent; peduncle 2–4.5 mm long; bracteoles borne at very base of peduncle, 0.5–0.7 mm long, narrowly triangular, eglandular, pilose, persistent; pedicel 11–13 mm long, nearly glabrous except sparsely sericeous at apex. Sepals 1–1.5 mm long beyond glands, triangular, obtuse or rounded at apex, abaxially glabrous or with a few appressed hairs, ciliate on margin, adaxially glabrous; glands 2–2.4 mm long. Petals pink, glabrous, abaxially carinate proximally, the margin of limb entire or minutely denticulate; lateral petals with the claw 1–1.5 mm long, the limb 4.5–5 mm long,

3.5–4 mm wide, truncate at base; posterior petal with the claw thicker than in lateral petals and the limb longer (5.5–6 mm). Stamens glabrous; filaments connate at base, 2–3.5 mm long, strongly heteromorphic, longest opposite sepals, shortest opposite posterior petal, thickest opposite posterior-lateral petals; anthers 1–1.4 mm long, \pm alike. Ovary 1.5 mm high, densely pilose; styles glabrous; anterior style 3–3.5 mm long, slightly bowed, dorsally very slightly apiculate at apex; posterior styles 3.5–4 mm long, strongly bowed from the base, dorsally truncate at apex. Samara broadly triangular with rounded corners, 2.5–3 cm wide and high; lateral wing membranous, continuous at base and apex, cleft at apex up to halfway to nut, nearly glabrate at maturity; dorsal and ventral crests absent; nut inserted well above center of lateral wing, sparsely pilose; ventral areole ovate or elliptical, 2.5–3.5 mm high, 2–3 mm wide; disc below fruit with its 3 lobes extended upward to apex of a massive torus.

ADDITIONAL COLLECTION EXAMINED. **Mexico.** CHIAPAS: Same locality as type, 14 Dec fl, *Breedlove 48675* (C.A.S. MICH).

I am happy to name this species for Frank Almeda (b. 1946), one of the collectors of the type, who has had an illustrious and productive career in systematic botany, specializing in the family Melastomataceae. *Mascagnia almedae* is closely related to *M. vacciniifolia* Nied. (Fig. 3), with which it shares at least three synapomorphies: adventitious roots on the stems, a samara completely devoid of a dorsal crest, and vertical extensions of the disc below the fruit to the top of the massive torus. The adventitious roots are unique not only in the genus, but (so far as I know) in the family; I do not know whether the stems can also twine, but the adventitious roots are formed on young stems, in the second season of growth in *M. almedae*. *Mascagnia vacciniifolia* differs from *M. almedae* in having \pm persistently velutinous or tomentose stems, stipules only 0.3–0.6 mm long, leaves with the lamina 2–4 (–6) cm long and 1.2–3 (–3.5) cm wide, the ovary glabrous or sparsely pilose to soon glabrate, the styles dorsally apiculate or hooked at apex, and the samara 1.3–2.3 cm wide and high.

Mascagnia bierosa (Adr. Juss.) W. R. Anderson, comb. nov. *Hiraea bierosa* Adr. Juss., Ann. Sci. Nat. Bot., Sér. 2, 13: 260. 1840. *Mascagnia sepium* subsp. *bierosa* (Adr. Juss.) Griseb. in Mart., Fl. Bras. 12(1): 96. 1858. *Mascagnia sepium* var. *glabrata* Nied., Arbeiten Bot. Inst. Königl. Lyceum Hosianum Braunsberg 3: 7. 1908.—TYPE: BRAZIL, Bahia, *Blanchet* (holotype: G!).

Mascagnia sepium var. *macrophylla* Nied., Arbeiten Bot. Inst. Königl. Lyceum Hosianum Braunsberg 3: 6. 1908.—SYNTYPES: BRAZIL, Minas Gerais: *Schwacke 7356, 10847, and 11947*, none seen.

Mascagnia sepium var. *salzmänniana* Nied., Arbeiten Bot. Inst. Königl. Lyceum Hosianum Braunsberg 3: 6. 1908.—TYPE: BRAZIL, Bahia, *Salzmann 99* (lectotype, designated by W. R. Anderson, 2007, p. 90: G!; isoelectotypes: G! P! W).

Mascagnia leonii W. R. Anderson, Contr. Univ. Michigan Herb. 19: 381. 1993.—TYPE: BRAZIL, Minas Gerais: Carangola, *Leoni* [GFJP 1213] (holotype: GFJP!; isotype: MICH!).

Mascagnia bierosa is a species of eastern Brazil (Bahia, Espírito Santo, Minas Gerais, Distrito Federal, Goiás, and São Paulo). It is notable for its large glabrate leaves, carinate lateral petals, and especially the extraordinarily long stipules. After describing it as *M. leonii* (Anderson 1993) I realized that Jussieu had described in

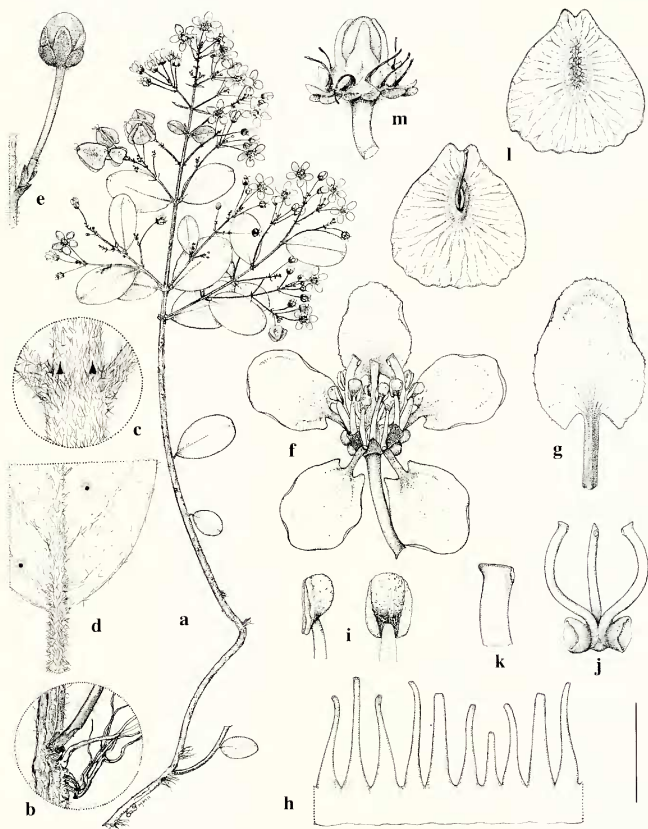


FIG. 3. *Mascagnia vacciniifolia*. a. Flowering and fruiting branch. b. Adventitious roots on stem. c. Node to show interpetiolar stipules. d. Abaxial surface of leaf. e. Flower bud. f. Flower, posterior petal uppermost. g. Posterior petal, adaxial view. h. Androecium laid out, adaxial view, anthers removed, shortest filament opposite posterior petal. i. Anthers, lateral view (left) and abaxial view (right). j. Gynoecium, anterior style in center. k. Apex of posterior style. l. Samaras, abaxial view (above) and adaxial view (below). m. Torus after removal of mature samaras. Scale bar equivalents: a, 4 cm; b, 8 mm; c, 4 mm; d, 5 mm; e, 8 mm; f, 5 mm; g, 3.3 mm; h, 2.7 mm; i, 1.6 mm; j, 4 mm; k, 1.3 mm; l, 1.3 cm; m, 2 mm. (Based on: a–k, *Uiley 5934*, DUKE; l, m, *Lent 2521*, F.)

1840 and Niedenzu then described it three times as varieties of *M. sepium* (Adr. Juss.) Griseb. The following synoptical description is based on my 1993 publication plus the several specimens seen since.

Woody vine; stems tomentose or loosely sericeous to soon glabrate; stipules (1.5–) 2.5–6 mm long (but often broken off near base in age), tomentose to glabrate; petiole often 13–28 mm long, tomentose or loosely sericeous to soon glabrate, eglandular; lamina relatively large (often 9–18 cm long, 6–11.5 cm wide), broadly cuneate or rounded at base, initially tomentose or loosely sericeous on both sides but soon quite glabrate, often coriaceous at maturity, with a discolored margin ca. 0.5 mm wide, eglandular or with several glands in an abaxial row (but usually not at very base), usually biglandular near apex; inflorescence consisting of unbranched pseudoracemes axillary to full-sized or reduced leaves or a panicle of several such pseudoracemes, the flowers \pm crowded distally, the axis (including peduncles and pedicels) tomentose or loosely sericeous to sometimes glabrescent; bracts 1.8–4 mm long, or longer at base of pseudoraceme; bracteoles borne from middle of peduncle to near apex, eglandular or usually 1 of each pair (occasionally both) bearing 1 gland; pedicel longer than, equal to, or occasionally shorter than peduncle; petals yellow, abaxially carinate or alulate; styles erect and straight or distally divergent, rounded or truncate dorsally at apex; samara tomentose at least on nut, continuous at base and apex, entire or notched at apex.

Mascagnia conformis W. R. Anderson, sp. nov.—TYPE: BRAZIL. Pará: Santarém, estrada que liga Alter do Chão, capoeira baixa, terreno arenoso, 12 Dec 1978 fl/fr, Vilhena, Lobo & Ribeiro 251 (holotype: NY!; isotypes: MICH! NY!).

Mascagnia cordifolia var. *peruviana* J. F. Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser., 13: 787. 1950.—TYPE: PERU. Loreto: Mishuyacu, *Klug* 25 (holotype?: US!; isotype: NY!).

Mascagniae schunkei similis, sed petalis roseis vel lilacinis (vel albis?), bracteolis (una cujusque paris) plerumque glandula 0.5–1 mm diametro instructis, et lamina glandulis proximalibus grandis et distalibus minoribus instructa differt.

Woody vine, rarely described as a shrub up to 2.5 m tall; stem persistently brown-sericeous; lamina of larger leaves 7–16 (–21) cm long, 5–10 (–14.5) cm wide, ovate or elliptical, cuneate or rounded at base, mostly acuminate (sometimes abruptly so) at apex, initially sericeous on both sides but soon glabrescent to glabrate above or sericeous on midrib, \pm persistently sericeous below with the straight sessile strongly appressed hairs denser on principal veins than between them or glabrescent in age but with some hairs persistent, especially on veins, usually bearing 1 or 2 glands 0.7–1.5 mm in diameter impressed in abaxial surface at or somewhat above base on each side of midrib and usually several similar or smaller glands in a distal row, often with a pair near the apex, the lateral veins 5–7 (–9) on each side of midrib; petiole 7–16 (–25) mm long, persistently sericeous, eglandular; stipules 1–2 mm long, narrowly triangular, sericeous, persistent or deciduous. Flowers borne in unbranched pseudoracemes 4–14 cm long, in axils of full-sized leaves; flowers (10–) 20–60 in each pseudoraceme, \pm evenly distributed and soon horizontal, the axis tightly or loosely brown-sericeous or velutinous; bracts 1.3–3.5 mm long, very narrowly linear, eglandular, sericeous, persistent; peduncle 3–8.5 mm long, sericeous; bracteoles borne at or somewhat below apex of peduncle, 0.5–1.5 mm long, narrowly triangular, sericeous, persistent, both eglandular or (usually) 1 of each pair bearing 1 large bulging eccentric abaxial gland 0.5–1 mm in diameter, the glands occasionally 2 and occasionally

present on both bracteoles; pedicel 4–10 mm long, sericeous to glabrescent. Sepals 0.5–1.5 mm long beyond glands, ovate or triangular, obtuse or rounded at apex, abaxially sericeous, at least in center, adaxially glabrous, appressed in anthesis; glands 2–2.5 mm long, free at apex. Petals pink or lilac (or white?), glabrous, abaxially smooth or carinate on claw, the margin of limb irregularly denticulate or minutely erose; lateral petals with the claw 1–1.5 mm long, the limb 3.5–5.5 mm long, 2.5–4.2 mm wide, truncate at base; posterior petal like the lateral 4 or the limb narrower. Stamens glabrous; filaments 1.5–2 mm long, \pm alike or longer opposite sepals than opposite petals, distinct or connate at base, straight; anthers 1–1.5 mm long, alike. Ovary 1.5 mm high, densely hirsute; styles 1.3–2 mm long, glabrous, stout, originally erect and straight, often diverging distally in age and becoming somewhat recurved, the apex stigmatic on internal angle and dorsally rounded, truncate, or acute; anterior style somewhat shorter and slenderer than posterior 2. Samara orbicular or broadly ovate, 2–3.5 cm wide and high, sometimes wider than high; lateral wing membranous, thinly sericeous to glabrate, continuous at base and apex, shallowly to deeply cleft at apex (15–60% of the distance to the nut); dorsal crest 0.5–2.5 mm wide, prolonged upward toward apex of samara and confluent with lateral wing; ventral crest 0.5–1.5 mm wide, extending from apex of nut upward and confluent with lateral wing; nut inserted above center of lateral wing, persistently tomentose; ventral areole ovate or triangular, 3–5 mm high, 2–2.5 mm wide; fruit subtended by a high, smooth, reddish, 3-lobed disc.

Distribution. Forests of Amazonia from Peru and Bolivia in the west to French Guiana and Maranhão, Brazil, in the east.

ADDITIONAL COLLECTIONS EXAMINED. **Bolivia.** BENI: junction of Rivers Beni and Madre de Dios, Aug fl, *Rusby* 733 (F, MICH, NY, US); PROV. Vaca Díez, road to Cachuela Esperanza E of Riberalta, primary forest, 11°05'S, 65°50'W, 230 m, Sep fl, *Solomon* 6161 (MICH, MO); same approx. loc., secondary forest, Sep fr, *Solomon* 6278 (MICH, MO, NY).—PANDO: PROV. Manuripi, entre el campamento Bay y Curichón, monte alto, Oct, *Beck et al.* 19517 (MICH, fr) & 19518 (MICH, fl). **Brazil.** ACRE: Boa Esperança, Abuman, Oct fr, *J. Kuhlmann* 696 (CEPEC).—AMAPÁ: estrada do Igarapé Pacoval, NE de Macapá, Nov fl, *Austin et al.* 7380 (MICH, NY); road to Porto Terezinha, from junction with main road, Nov fl, *Cowan* 38471 (NY); Mun. Mazagão, Macapá–Monte Dourado, vic. of Rio Preto, 0°06'S, 51°47'W, non-inundated moist forest, Dec fr, *Rabelo et al.* 3070 (MICH, MO, NY).—MARANHÃO: Fazenda Bacaba, 5 km S of MA 119 from entrance 3 km NW of Lago do Junco, 4°26'S, 44°58'W, hilltop forest, Oct fr, *Daly et al.* D495 (MICH).—MATO GROSSO: Mun. Alta Floresta, Hidrelétrica do Salto do Rio Apiacás, 10°15'S, 56°50'W, forest, Sep fr, *Cid Ferreira* 6279 (MICH, MO, NY).—PARÁ: Tucuruí, thickets, Feb ster, *Anderson* 13750 (MICH); IAN, Belém, Dec fr, *Archer* 8080 (NY); Mun. Monte Alegre, Monte Alegre–Alenquer, 1°40'S, 54°31'W, forest, Nov fr, *Cid Ferreira* 9446 (MICH, NY); Tucuruí, Oct fr, *Lima & Silva* 100 (NY); Km 345 along Belém–Brasília Highway, Aug fl/fr, *Maguire et al.* 56081 (MICH, NY); Peixe-Boi, forest, Oct fl, *Rodrigues* [MG 8810] (MICH).—RONDÔNIA: Km 79, Pôrto Velho–Cuiabá, edge of forest, Sep fr, *Duarte* 7164/Appa 513 (NY). **French Guiana.** Piste de Saint-Laurent vers Paul Isnard, Nov fl, *Billiet & Jadin* 1698 (MICH). **Peru.** LORETO: PROV. Requena, Genaro Herrera, Río Ucayali below Requena, upland forest, Dec fl/imm fr, *Gentry et al.* 21306 (MICH, MO); Nauta, Río Marañón above mouth of Río Ucayali, 4°30'S, 73°30'W, upland forest and second growth, Oct fr, *Gentry et al.* 29961 (MO); Ramón Castilla, Pevas, 3°20'S, 71°50'W, bosque primario, Oct fr, *Vásquez & Jaramillo* 9713 (MICH, MO). **Venezuela.** AMAZONAS: Depto. Atures 9–10 km después de Puerto Ayacucho, Caño Colombiano vía comunidad la Reforma, 6°25'N, 67°25'W, 37 m, Mar fr, *Castillo* 766 (MICH); en el Gavilán 30 km al E de Pto. Ayacucho, Nov imm fr, *Fernández* 2954 (F); Atures, cuenca del Río Cataniapo, desde el aeropuerto de Puerto Ayacucho hasta entrada a la comunidad de Las Pavas en la vía a Gavilán, 5°32'–40'N, 67°25'–37'W, Feb fl/fr, *Guanche* 1570 (MO).

Mascagnia conformis is very similar to *M. schunkei* (Fig. 4), and the epithet refers to that similarity. When I described *M. schunkei* (Anderson 1981), I mentioned my uncertainty about the color of the petals, and that uncertainty persisted in the recent treatment of the same Venezuelan flora (Anderson 2001). I now believe that two species are recognizable in the plants to which I have applied the name *M. schunkei*.

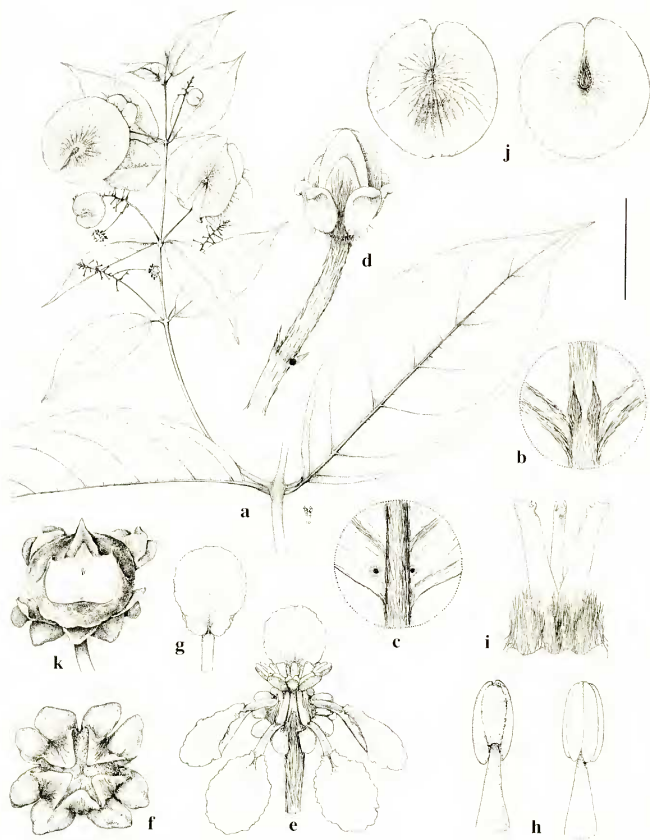


FIG. 4. *Mascagnia schunkei*. a. Fruiting branch. b. Node with interpetiolar stipules. c. Base of lamina, abaxial view. d. Flower bud. e. Flower, posterior petal uppermost. f. Calyx from above with eglandular anterior sepal at base. g. Posterior petal, adaxial view. h. Stamens, abaxial view (left) and adaxial view (right). i. Gynoeceium. j. Samaras, abaxial view (left) and adaxial view (right). k. Old fruit after fall of samaras, showing torus surrounded by lobed disc. Scale bar equivalents: a, 4 cm; b-d, 4 mm; e, 5 mm; f, g, 4 mm; h, i, 2 mm; j, 2.7 cm; k, 4 mm. (Based on: a, j, k, *Schunke* 6195, F; b-i, *Schunke* 7877, MICH.) Modified from a drawing first published in Mem. New York Bot. Gard. 32: 223, 1981.

When the color of the petals is known, there is no difficulty—*M. schunkei* has yellow petals; *M. conformis* has pink or lilac petals (or white?; see below). When petals are absent or their color unknown, the best distinguishing character is the bracteoles, which are eglandular or bear at most a tiny gland in *M. schunkei*; in *M. conformis* one bracteole usually bears a large bulging eccentric gland. The leaf glands are also useful, because in *M. schunkei* they are absent or very small and limited to the base of the lamina, while in *M. conformis* they are larger and usually present distally as well as at the base.

The Venezuelan collections cited above are problematic. *Guanchez 1570* was said to have white petals, which are otherwise unknown in *M. conformis*. *Castillo 766* and *Guanchez 1570* have the bracteoles eglandular or a few have only a small gland, while *Fernández 2954* has many bracteoles with a large gland as in most populations of *M. conformis*. In other respects the plants accord with *M. conformis*; all three have the leaf glands of that species. There remains the possibility that the plants of Venezuela represent a white-flowered species that could be segregated from *M. conformis*, but for now I think it best to associate them with that species.

Tetrapteryx natans W. R. Anderson, sp. nov.—TYPE: COLOMBIA. Caquetá: Araracuara, 0°37'S, 72°23'W, bosque secundario terrazas bajas, 3 Mar 1993 fr. *H. Vester 744* (holotype: MICH!). Fig. 5

Liana lignosa; lamina foliorum majorum (10–) 13–19 cm longa, 5–8.5 (–9.5) cm lata, mox glabrata, subtus (4–) 6–15 glandulis inter costam et marginem instructa; petiolus 5–8 (–10) mm longus; stipulae connatae 0.5–1.3 mm longae, 0.4–0.8 mm latae; inflorescentia multiflora paniculata floribus in umbellis 4-floris portatis, axibus albo-sericeis; petala lutea; stamina glabra; 2 styli postici crassi, stylus anticus gracilis; mericarpium alis lateralibus superioribus 3–9 (–15) mm longis, 6–8 (–12) mm latis, inferioribus 1–4 (–6) mm longis, 3.5–6 (–8) mm latis, alula dorsali 1.5–3 mm lata, 6–12 mm alta, discreta, nuce 9–12 mm diametro, inter alis lateralibus et dorsali laevi.

Woody vine; stems initially sericeous with very short white tightly appressed hairs, soon glabrate, smooth or eventually developing short to elongated lenticels. Lamina of larger leaves (10–) 13–19 cm long, 5–8.5 (–9.5) cm wide, elliptical or somewhat ovate, cuneate or rounded at base, acuminate at apex, initially thinly sericeous on both sides with very short white tightly appressed hairs but nearly or quite glabrate at maturity, bearing (4–) 6–15 small glands on each side of midrib, impressed in abaxial surface, \pm in one row midway between midrib and margin or scattered but not tracking the margin, up to 0.7 (–1.4) mm in diameter at base, 0.2–0.4 mm in diameter distally, the principal lateral veins 6–8 on each side of midrib, the cross-veins not horizontal or parallel, the fine reticulum often prominent on both sides; petiole 5–8 (–10) mm long, initially sericeous but soon nearly to quite glabrate, eglandular; stipules of opposite leaves connate in interpetiolar pairs, the stipule-pair 0.5–1.3 mm long, 0.4–0.8 mm wide, narrowly triangular, flat, mostly soon deciduous, leaving a scar 0.4–0.8 mm wide. Inflorescence large and many-flowered, paniculate with the branches dichasial, the flowers borne ultimately in umbels of 4; axes thinly sericeous with the white hairs short, straight, and \pm tightly appressed; reduced leaves in the inflorescence with petiole 0.5–3 mm long and lamina 4–25 mm long, 4–15 mm wide, ovate or orbicular, bearing 2–several large raised glands on abaxial surface between midrib and margin, often reddish, thin-textured, deciduous in fruit; floriferous bracts 0.7–1.3 mm long and wide, ovate, eglandular, abaxially thinly sericeous, adaxially glabrous, persistent or deciduous; peduncle (2.5–) 4–7.5 mm long, sericeous like axis

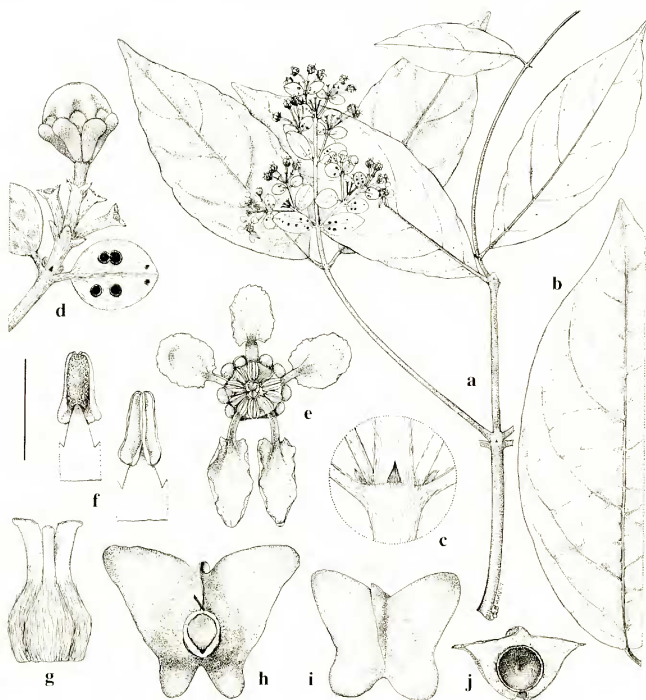


FIG. 5. *Tetrapteryx natans*. a. Flowering branch. b. Detached large leaf, adaxial view. c. Node with conate interpetiolar stipules. d. Umbel with one flower bud, the other three removed, subtended by reduced orbicular inflorescence leaves, the left showing adaxial surface, the right showing abaxial surface. e. Flower, posterior petal uppermost. f. Stamens, abaxial view (above) and adaxial view (right). g. Gynoecium, anterior style in center. h. Mericarp, adaxial view. i. Mericarp, abaxial view. j. Mericarp, cross-section, seed removed. Scale bar equivalents: a, b, 4 cm; c, 4 mm; d, e, 5.7 mm; f, g, 2 mm; h-j, 1.3 cm. (Based on: a, c-g, *Vester 700*, MICH; b, i, j, *Vester 744*, MICH; h, *Díaz et al. 211*, MO.)

of inflorescence; bracteoles like bracts but shorter and more rounded, borne at or slightly below apex of peduncle; pedicel 3–6 mm long, initially sericeous, often glabrescent and distally somewhat inflated in age. Sepals 1–1.5 mm long beyond glands, 1.3–2 mm wide, broadly triangular or rounded, abaxially thinly sericeous proximally and glabrous distally, adaxially glabrous, pressed against filaments in anthesis, the anterior eglandular, the lateral 4 biglandular with the glands 2.4–3.2 mm long, obovate, slightly detached and spreading at apex, the longest glands (the 2 adjacent to the posterior petal) slightly decurrent onto pedicel. Petals yellow, glabrous, the claw

1.2–2 mm long, the limb 4.2–5.5 mm long, 3–5 mm wide, obovate, truncate or slightly cordate at base; lateral petals spreading, crose or denticulate, the anterior-lateral pair larger and with longer claws than the posterior-lateral pair; posterior petal erect with the limb distally reflexed and often coarsely dentate, the claw about as long as in the anterior-lateral petals and thicker. Stamens glabrous; filaments 1.5 mm long, 1/3–1/2-connate, those opposite sepals wider and slightly longer than those opposite petals; anthers 1.2–1.5 mm long, alike, the connective somewhat swollen abaxially but not exceeding locules at apex. Ovary 1–1.5 mm high, sericeous; styles 1.3–1.5 mm long, glabrous except for sericeous base; 2 posterior styles stout, with a short blunt apical-dorsal projection, the stigmas linear and decurrent on inner face of style; anterior style slightly shorter and notably slenderer than posterior styles, truncate at apex, the stigma covering whole apex, not or hardly decurrent. Mericarp derived from a samara with 4 lateral wings through enlargement of the nut and reduction of the wings, densely and \pm persistently sericeous or appressed-tomentose with very short, sometimes fusiform hairs; upper lateral wings 3–9 (–15) mm long, 6–8 (–12) mm wide, broadly triangular or rounded; lower lateral wings 1–4 (–6) mm long, 3.5–6 (–8) mm wide, broadly triangular or rounded, sometimes quite distinct from upper wings, sometimes flowing into them without the indentation between them reaching nut; dorsal wing 1.5–3 mm wide at apex, 6–12 mm high, distinct from lateral wings, extending as a crest halfway down dorsal surface of nut or as far as base, sometimes extending between lateral wings at apex and continuing down ventral face of nut to areole; nut smooth between dorsal and lateral wings, 9–12 mm in diameter, spheroidal; ventral areole 5–9 mm high and wide, ovate or circular.

Distribution. Southeastern Colombia, northeastern Peru, and along the Rios Solimões and Amazonas in Brazil; lowland wet forests, both on terra firme and in periodically inundated places; 100–160 m.

ADDITIONAL COLLECTIONS EXAMINED. **Brazil.** AMAPÁ: entre Km 25 da BR 156 e Matapi, NW de Macapá, Nov fl. *Austin et al. 7416* (MICH); Rio Matapi entre a estrada do Matapi e a foz do rio, Macapá, Mar fr. *Rabelo et al. 1836* (MICH, NY) & *1859* (MICH, NY); Rio Pedreira, médio curso, Macapá, Apr fr. *Rabelo et al. 2657* (MICH, NY).—AMAZONAS: Ega [Tefé], *Poeppig 2820* (BM, G).—PARÁ: Mun. Barcarena, Ilha das Onças, 1°25'S, 48°27'W, *A. Anderson et al. 1151* (MICH); south forest of the I.A.N., Belém, Dec fr. *Archer 7937* (F. K. NY, US); Rivers Mojú and Acará, S of Belém ca. 1 mi downstream from Acará, Jun fr. *Austin & Cavalcante 4123* (MG, MO); Rio Moções, 45 min. by boat below Frances, 0°45'S, 49°41'W, Nov fr. *Beck 403* (MICH); São Miguel, beira do Rio Guamá, Jan fr. *Fróes 20370* (MICH, NY); IPEAN Reserva Aurá, Oct imm fr. *Pires & Silva 11190* (MICH); IPEAN, Sep fl. *Pires 14868* (MICH); Cuanta do Anajás, Rio Anajás and Vista Alegre, 0°57'S, 49°48'W, Nov fl. *Prance 30272* (MICH); 50 min. below Tauari, 0°48'S, 49°45'W, Nov fr. *Prance 30415* (NY); on lands of Instituto Agronomico do Norte, Jan fr. *Silva 44* (NY, US); Ilha de Marajó, Rio Pracuíba-mirim, ca. 1 hour upstream from São Sebastião de Boa Vista, Oct fl/imm fr. *Sobel et al. 4742* (MICH); Ilha de Marajó, Cuantã acima de Anajás, Rio Anajás, 0°47'S, 49°48'W, Nov fl/fr. *Tavares 318* (MICH). **Colombia.** CAQUETÁ: Araracuara, 0°37'S, 72°23'W, Dec fl. *Vester 700* (MICH). **Peru.** LORETO: Río Ampiacu, Sep fl. *Croat 20692* (MICH); Maynas, riveras del Río Blanco (above Tamshiyacu), Mar fr. *Díaz et al. 211* (INPA, MO); Río Yaguasyacu, tributary of Río Ampiyacu, Nov fl. *Gentry & Revilla 20517* (MICH, MO); Loreto, Pampa Hermosa and vicinity, Río Corrientes, 1 km S of junction with Río Macusari, 3°15'S, 75°50'W, Dec fl. *Lewis et al. 10056* (MICH); Maynas, Indiana, Explorama Reserve, 3°28'S, 72°50'W, Oct fl. *Vásquez & Jaramillo 12899* (MICH); Maynas, along Río Itaya, May fr. *L. Williams 44* (F).

The epithet *natans* means swimming, and refers to the mericarp of this species, which is obviously derived from a tetrapteroid samara but has almost certainly abandoned dispersal by wind for dispersal by water—its nut is large and thick-walled, and its wings are much reduced. Occasional populations have relatively long wings, but even those have such a large nut that it seems most unlikely that the mericarp would

be carried far by wind. At the other extreme, some populations have the upper lateral wings very short and broadly rounded and the lower lateral wings reduced to little more than a broad thick rim; such fruits bear little resemblance to the samara of *Tetrapteryx* and are easily mistaken for a species in another genus, such as *Callaeum antifibrile* (Griseb.) D. M. Johnson.

Tetrapteryx natans belongs to sect. *Tetrapteryx* (sect. *Lophogynixa* Nied. in the classification of Niedenau, 1928), a large and difficult group. In Niedenau's treatment this species would fall into his subsect. *Leiocarya* Nied., because the nut of the mericarp lacks outgrowths between the dorsal and lateral wings, and among the species he treats in that subsection this could be only *T. crispa* Adr. Juss. or *T. magnifolia* Griseb. The species described here is certainly not *T. crispa*, which is well known and has long chartaceous wings on its wind-dispersed samara, broader stipules, and longer petioles. *Tetrapteryx magnifolia* is a more difficult problem. Grisebach cited two syntypes, Ruiz s.n. from Chicoplaya, Peru, and Poeppig 2820 from Ega [Tefé], Brazil. Poeppig 2820 represents *T. natans* and is cited above as this species. The B sheet of the Ruiz collection (F neg. 12736!), which was designated lectotype by Cuatrecasas (1958, p. 442), and which does seem to have been the principal basis for Grisebach's description, no longer exists, and the species seems to be extremely rare. I have seen one specimen that seems likely to represent *T. magnifolia* sens. str., Vásquez & Jaramillo 7218 from Maynas, Peru (MICH); it has the enormous leaf of the Ruiz specimen and wind-dispersed samaras with long chartaceous wings on the samara, which would exclude identity with *T. natans*. If a duplicate of the Ruiz type can be found, it should be designated the lectotype of *T. magnifolia*.

Tetrapteryx subaptera Cuatrec. is a species of mangrove swamps on the Pacific coast of Colombia and adjacent Ecuador. Like *T. natans* it belongs to sect. *Tetrapteryx*, and it too has lost the functional wings from its mericarps so that they are now dispersed by water, but the two species have disjunct distributions and differ in their morphology. The lamina in *T. subaptera* is usually narrower, up to 5.5 (–6) cm wide. The hairs of young stems and inflorescence axes are golden, and the inflorescence is smaller than in *T. natans*—shorter, less branched, with many fewer flowers. The filaments of *T. subaptera* are thinly sericeous on both sides in the proximal half. Most strikingly, the mericarps of *T. subaptera* are quite different from those of *T. natans*. The lower lateral wings of *T. subaptera* are completely absent, represented only by swellings near the base. The upper lateral wings are represented by very short, relatively thin winglets that extend upward beside the apical extension of the dorsal wing and are partially adnate to it. The nut of the mericarp is only about 7 mm in diameter. It is possible that *T. natans* and *T. subaptera* are sister species, descended from a common ancestor with reduced fruit wings, but it seems more probable that they evolved independently from ancestors with wind-dispersed samaras.

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